



Appraisal

Critically Appraised Papers

Balance-specific training embedded within a pulmonary rehabilitation program may reduce falls risk in people with COPD

Synopsis

Summary of: Beauchamp MK, Janaudis-Ferreira T, Parreira V, Romano JM, Woon L, Goldstein RS, Brooks D. A randomized controlled trial of balance training during pulmonary rehabilitation for individuals with COPD. *CHEST* 2013;144:1803-1810.

Question: In people with chronic obstructive pulmonary disease (COPD) characterised by an increased falls risk, does the addition of a tailored balance-training intervention to a standard pulmonary rehabilitation program improve clinical measures of balance? **Design:** Randomised controlled trial with concealed allocation and blinding of outcome assessors. **Setting:** In-patient rehabilitation hospital in Toronto, Canada. **Participants:** Adults with stable COPD were included if they reported a decline in balance, a fall or near-fall in the previous five years. Exclusion criteria included hearing or cognitive impairment, or co-morbid conditions thought to jeopardise safety or influence balance, such as a neurological or musculoskeletal condition. Randomisation allocated 21 to the intervention group and 18 to the control group.

Interventions: Participants in both groups completed a standard pulmonary rehabilitation program, which involved 30 minutes of supervised exercise training twice daily, five days a week, for six weeks. Pulmonary rehabilitation also included prescription of daily breathing exercises, and self-management education with psychological and social support. Those in the intervention group replaced three exercise training sessions each week with a

balance-specific training intervention, which consisted of stance exercises, transition exercises, gait exercises and functional strengthening, progressed as able. **Outcome measures:** The primary outcome measure was balance, as assessed using the Berg Balance Scale (BBS) and the Balance Evaluation Systems Test (BESTest). Secondary outcomes included: balance confidence, self-reported physical function and a measure of functional strength (30-second chair stand test). **Results:** A total of 36 participants completed the study. Compared with the control group, on completion of the intervention period, greater gains were seen in the BBS (5.4 units; 95% CI, 2.1 to 8.6) and the BESTest (9.6 units; 95% CI, 3.9 to 15.3). Similar results in favour of the intervention group were seen in self-reported physical function and functional strength, without any between-group difference in balance confidence. **Conclusion:** The inclusion of balance-specific training as part of a standard pulmonary rehabilitation program results in gains in clinical measures of balance in people with COPD characterised by falls risk.

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<http://dx.doi.org/10.1016/j.jphys.2014.05.013>

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Commentary

Exercise is one of the most-researched areas of falls prevention for older people.¹ Pleasingly, a number of different exercise approaches have been shown to be effective, including: home-based and group multimodal exercise programs, tai chi,¹ and a multifaceted podiatric program including foot and ankle exercises.² This offers choice in terms of evidence-based exercise programs. Despite this, and other effective interventions shown to reduce falls,¹ there is limited evidence of translation into practice, with no reduction in fall-related hospitalisation rates over the past decade.³ A possible contributor to the lack of translation is that there may be a need to tailor exercise (and other) interventions to high falls-risk clinical populations, including older people with arthritis, stroke and COPD. For people with COPD, this may mean modifying the intensity, progression and rest periods associated with exercise.

The randomised controlled trial by Beauchamp and colleagues aimed to address this issue in people with COPD. The exercise program incorporated static, dynamic, functional balance and strength-training exercises, together with single-task and dual-task exercises. This was consistent with recommendations from the meta-analysis of exercise programs to reduce falls by Sherrington et al.⁴ which included that a moderate challenge to balance is needed. Both the control group (regular pulmonary

rehabilitation exercise) and intervention group (with three of the pulmonary rehabilitation exercise sessions/week replaced by the balance-exercise program) demonstrated improved balance performance over the six-week program, although improvements were significantly greater in the balance-training group. No adverse events occurred with the balance-exercise program. However, this study was not powered to investigate falls as an outcome. Therefore, these promising results need to be extended to a large-scale, randomised trial that is sufficiently powered to identify differences in falls in this population.

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References

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